

TABLE 9.5.1-1 FIRE PROTECTION SYSTEM FIRE SUPPRESSION SYSTEMS

<u>System</u>	<u>Area</u>	<u>Design Density/Flow Rate</u>
Automatic wet-pipe sprinkler system	Turbine lube oil storage tank room	Per NFPA No. 13 for extra hazard occupancy
	Auxiliary boiler room	Per NFPA No. 13 for ordinary hazard occupancy
	Auxiliary Feedwater pipe chase area	0.20 gpm/sq. ft. for the most remote 1500 sq. ft.
	Turbine lube oil reservoir room	Per NFPA No. 13 for extra hazard occupancy
	Condenser pit (area beneath the main condensers)	Per NFPA No. 13 for ordinary hazard occupancy
	Dry waste compactor (radwaste building)	Per NFPA No. 13 for ordinary hazard occupancy
	Access control area (control building)	Per NFPA No. 13 for ordinary hazard occupancy
	Cable area above access control area	0.3 gpm/sq. ft. for the most remote 1,000 sq. ft.
	Vertical cable chases (auxiliary and control buildings)	0.5 gpm/sq. ft. with all heads in the most remote level open
	Lube oil storage room	Per NFPA No. 13 for extra hazard occupancy
	Laundry Decontamination Facility	Per NFPA No. 13 for extra hazard occupancy
RAM Storage Building	Per NFPA No. 231C-1995 for Class III High Rack Storage	
Automatic water spray system	Hydrogen seal oil unit	0.30 gpm/sq. ft.
	Main transformer	0.25 gpm/sq. ft.
	Startup transformer	0.25 gpm/sq. ft.
	Auxiliary transformer	0.25 gpm/sq. ft.
	Station service transformer	0.25 gpm/sq. ft.

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	ESF transformer	0.25 gpm/sq. ft.
Manual water spray system	Turbine generator bearings	0.30 gpm/sq. ft.
	Auxiliary feedwater pump (turbine driven)	0.30 gpm/sq. ft.
	Steam generator feed pump	0.30 gpm/sq. ft.
Automatic pre-action sprinkler system	Fuel building railroad bay	0.30 gpm/sq. ft.
	Lower cable spreading room	0.3 gpm/sq. ft. of floor area for the most remote 3,000 sq. ft.
	Upper cable spreading room	0.3 gpm/sq. ft. of floor area for the most remote 3,000 sq. ft.
	Cable trays at El. 1974'-0", 2000'-0", and 2026'-0" of the auxiliary building	0.3 gpm/sq. ft. of associated floor area for the most remote 3,000 sq. ft. of tray surface
	Diesel generator rooms	0.3 gpm/sq. ft. for entire space
	Area below turbine generator operating floor and mezzanine floor	0.30 gpm/sq. ft. for the most remote 3,000 sq. ft. area and 0.20 gpm/sq. ft. for the most remote 10,000 sq. ft. area
	E.O. Room, Computer Room, and Conference Room, (3613, 3613A, and 3613B)	Per NFPA No. 13 for ordinary hazard occupancy
Manual preaction sprinkler system	North cable penetration inside the containment	0.30 gpm/sq. ft. of floor area for the most remote 1,000 sq. ft.
	South cable penetration inside the containment	0.30 gpm/sq. ft. of floor area for the most remote 1,000 sq. ft.
Halon 1301 system	ESF switchgear rooms	5 percent minimum for 10 minutes
	Control cabinet, load center, and MG sets room	5 percent minimum for 10 minutes
	Electrical penetration rooms	5 percent minimum for 10 minutes

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TABLE 9.5.1-1 (Sheet 3)

Control room cable trenches and associated wall chases	5 percent average throughout the space
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TABLE 9.5.1-2 FIRE PROTECTION SYSTEM REQUIREMENTS

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
1. Fire Detection Instrumentation	Instrumentation for each fire zone protecting safety-related equipment shall be operable.	Whenever the equipment that is being protected is required to be operable.	a. Any, but not more than half, of the early warning and notification type instruments in any fire zone inoperable.	a.1. Outside containment a) restore to operable status <u>OR</u> b) establish an hourly fire watch patrol in the affected area.	a) within 14 days b) Within next 1 hour	a.1. A sample ¹ of the fire detection instruments, which are accessible during plant operation and in rooms covered by more than one detector shall be demonstrated operable at least once per year. If a detector fails, additional detectors shall be tested in order to meet the sampling plan requirement. Each detection instrument in areas not covered by more than one detector shall be demonstrated operable at least once per year. All fire detection instruments shall be demonstrated operable at least once per 5.0 years. a.2. Inside containment a) restore to operable status <u>OR</u> b) inspect affected containment zone every 8 hours <u>OR</u> c) monitor containment air temperature every hour.
						a.1. A sample ¹ of the fire detection instruments, which are accessible during plant operation and in rooms covered by more than one detector shall be demonstrated operable at least once per year. If a detector fails, additional detectors shall be tested in order to meet the sampling plan requirement. Each detection instrument in areas not covered by more than one detector shall be demonstrated operable at least once per year. All fire detection instruments shall be demonstrated operable at least once per 5.0 years. a.2. Fire detectors which are not accessible during plan operations shall be demonstrated operable during each cold shutdown exceeding 24 hours unless performed in the previous 12 months. b. The NFPA Standard 72 supervised circuits associated with the detector alarms of each of the fire detector instruments shall be demonstrated operable at least once per year.

¹A sample is a number larger than that required to provide detector reliability of greater than or equal to 95%.

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TABLE 9.5.1-2 (Sheet 2)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
1. Fire Detection Instrumentation (Cont.)			b. More than half of the early warning and notification type instruments in any fire zone inoperable	b.1. Outside containment a) establish an hourly fire watch patrol in the affected area.	a) Within 1 hour.	
			<u>OR</u> any fire suppression instrument in the zone inoperable	b.2. Inside containment a) inspect affected containment zone every 8 hours <u>OR</u> b) monitor containment air temperature every hour	a) Within 1 hour.	
			<u>OR</u> any two or more adjacent detection instruments inoperable.		b) Within 1 hour.	
2. Fire Suppression Water System	a. Two operable fire suppression pumps aligned to the fire suppression header.	At all times.	a.1. One pump inoperable	a.1. Restore to operable status <u>OR</u> provide an alternate pump.	a.1. Within 7 days	a.1. Weekly verification of the water level in each fire water storage tank.
			a.2. Two pumps inoperable	*a.2. Provide a backup fire suppression water system.	a.2. Within 24 hours.	a.2. Monthly starting of the electric motor-driven pump.
						a.3. Monthly verification that each valve in the flow path is in its correct position.
						a.4. Performance of a yard loop and hydrant flush at least once per 3 years.
						a.5. Annual cycling of each testable valve in the flow path.
						a.6. Performance of a system functional test which includes simulated automatic actuation of the system throughout its operating sequence at least once per 18 months.
						a.7. Performance of a flow test of the system at least once per 3 years.

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TABLE 9.5.1-2 (Sheet 3)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
2. Fire Suppression Water System (Cont.)	b. Two separate water supply tanks.	At all times.	b.1. One tank inoperable	b.1. Restore to operable status <u>OR</u> provide an alternate water supply.	b.1. Within 7 days.	b.1. Monthly verification of the fuel oil day tank level and starting of the fire pump diesel engine.
			b.2. Two tanks inoperable	*b.2. Provide a backup fire suppression water system.	b.2. Within 24 hours	b.2. Quarterly verification that a sample of diesel fuel from the fuel oil tank is within acceptable limits. b.3. Inspection of the fire pump diesel engine at least once per 18 months during shutdown or with the other two fire suppression pumps operable.
	c. Operable flow path.	At all times.	c. Flow path inoperable.	*c. Provide a backup fire suppression system.	c. Within 24 hours.	c.1. Weekly verification of the electrolyte level of each battery and the overall battery voltage for each fire pump diesel starting 24-volt battery bank. c.2. Quarterly verification that the specific gravity is appropriate for continued service of the battery. c.3. Inspection of the batteries, cell plates, battery racks, and battery-to-battery and terminal connections at least once per 18 months.
3. Spray and/or Sprinkler Systems	Spray and/or sprinkler systems protecting safety-related areas shall be operable.	Whenever the equipment being protected is required to be operable.	a. One or more spray and/or sprinkler systems inoperable in areas containing redundant systems or components.	a. Establish a continuous fire watch with backup fire suppression capability in the affected area.	Within 1 hour.	a. Monthly verification that each valve in the flow path is in its correct position.
			b. Any other spray and/or sprinkler systems inoperable	b.1. Establish an hourly fire watch patrol in the affected area.		b. Annual cycling of each testable valve in the flow path.

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TABLE 9.5.1-2 (Sheet 4)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
3. Spray and/or Sprinkler Systems (Cont.)				b.2 Inside containment a) establish an hourly fire watch patrol in the affected area <u>OR</u> b) monitor containment air temperature every hour		c.1. Performance of a system functional test which includes a simulated automatic actuation of the system at least once per 18 months. c.2. Inspection of the dry pipe spray and sprinkler headers at least once per 18 months. c.3. Inspection of each nozzle's spray area to verify the spray pattern is not obstructed at least once per 18 months. d. Performance of an air or water flow test through each open head spray/sprinkler header at least once per 3 years.
4. Halon Systems	Halon systems protecting safety-related areas shall be operable.	Whenever the equipment being protected is required to be operable.	a. One or more Halon systems inoperable in areas containing redundant systems or components. b. Any other Halon systems inoperable.	a. Establish a continuous fire watch with backup fire suppression capability in the affected area. b. Establish an hourly fire watch patrol in the affected area.	a. Within 1 hour. b. Within 1 hour.	a. Semi-annual verification of Halon storage tank weight (or level) and pressure. b. Verification that the system actuates manually and automatically upon receipt of a simulated actuation signal at least once per 18 months.

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TABLE 9.5.1-2 (Sheet 5)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
5. Fire Hose Stations	Fire hose stations protecting safety-related areas shall be operable.	Whenever the equipment in the areas protected by the stations is required to be operable.	One or more fire hose stations inoperable.	Provide equivalent capacity backup hose protection to the unprotected area.	Within 1 hour if the inoperable station is the primary means of fire protection in the affected area; otherwise, within 24 hours.	<ul style="list-style-type: none"> a. Monthly inspection of the fire hose stations accessible during plant operations. b.1. Inspection of the fire hose stations not accessible during plant operations at least once per 18 months. b.2. Removal of the hose for inspection and racking at least once per 18 months. b.3. Inspection of all gaskets and replacing any degraded gaskets in the couplings at least once per 18 months. c.1. Partial opening of each hose station valve to verify valve operability and no flow blockage at least once per 3 years. c.2. Performance of a hose hydrostatic test 5 years from installation and three years thereafter.

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TABLE 9.5.1-2 (Sheet 6)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
6. Fire Barrier Penetrations	All fire barriers and their penetrations separating safety-related areas or separating portions of redundant systems important to safe shutdown shall be operable.	At all times.	One or more inoperable.	a. Establish a continuous fire watch on one side of the affected barrier <u>OR</u>	a. Within 1 hour.	<p>a.1. Inspection of the exposed surfaces of each fire rated assembly at least once per 18 months.</p> <p>a.2. Inspection and drop testing of at least 10% of each accessible fire damper type (horizontal and vertical) at least once per 18 months. One vertical damper closure failure per 10% sample and one horizontal damper closure failure per 20% sample (0 failures if <20% sample) will be acceptable. If failure rates exceed the acceptable limits, and additional equivalent sample of the applicable damper type shall be drop tested. This process shall continue until acceptable test results are obtained for the sample. Each accessible fire damper will be tested a minimum of once every 15 years. Approximately 10 of the 254 vertical power block dampers (<4%) are inaccessible for drop testing performance due to adjacent duct or damper obstructions. Drop testing may be waived for these dampers, unless fire damper drop test results indicate an adverse failure trend. A visual inspection of each inaccessible damper will be performed during the normally scheduled drop test date for that damper.</p>

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TABLE 9.5.1-2 (Sheet 7)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
6. Fire Barrier Penetrations (Cont.)				<p>b. Verify the operability of fire detectors on at least one side of the inoperable barrier <u>AND</u> establish an hourly fire watch patrol.</p>	<p>b. Within 1 hour.</p>	<p>a.3 Inspection of at least 10% of each type (electrical and mechanical) of sealed penetration at least once per 18 months, except for all grouted conduit, blank sleeves, corebores, blockouts (i.e. abandoned holes), piping 2" or less, tubing, all HVAC penetrations with closure type N/R or N/A, and penetrations sealed with steel plate secured to both sides of the opening. If apparent changes in appearance or abnormal degradations are found, a visual inspection of an additional 10% of each type of sealed penetration shall be made. This inspection process shall continue until a 10% sample with no apparent changes in appearance or abnormal degradation is found. Samples shall be selected such that each penetration seal will be inspected every 15 years.</p> <p>b.1. Semi-annual inspection of the automatic hold-open, release and closing mechanism and latches of the required fire doors.</p> <p>b.2. Monthly testing of the Fire Door Supervision System for each electrically supervised fire door.</p> <p>b.3. Weekly verification that each locked closed fire door without electrical supervision is closed.</p> <p>b.4. Daily verification that doors with automatic hold-open and release mechanisms are free of obstructions.</p> <p>b.5 Performance of a functional test for doors with automatic hold-open release mechanisms at least once per 18 months.</p>

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TABLE 9.5.1-2 (Sheet 8)

<u>SYSTEM</u>	<u>REQUIREMENT</u>	<u>APPLICABLE MODES</u>	<u>CONDITION</u>	<u>REQUIRED ACTION</u>	<u>TIME REQUIREMENT</u>	<u>TESTING/INSPECTION REQUIREMENT</u>
6. Fire Barrier Penetrations (Cont.)						b.6 Daily verification that each unlocked fire door without electrical supervision is closed.
				c. Inside containment	c. Within 1 hour.	
				c.1 With operable detection inside containment, monitor containment air temperature at least once per 24 hours in accordance with Technical Specifications.		
				c.2 Without operable detection inside containment, monitor air temperature at least once per hour in accordance with the locations listed in Technical Specifications.		
				d. Aux. Bldg. Rooms 1203, 1304 and Control Bldg. Room 3401.	d. Within 1 hour.	
			d.1 Establish an hourly fire watch patrol in the room.			

* With the Fire Suppression Water System in this condition, establish a backup Fire Suppression Water System within 24 hours. If this required action can not be met, the requirements of Technical Specification 3.0.3 shall be initiated. Modifications to these requirements shall not be made without prior approval of the NRC.

TABLE 9.5.3-1 EMERGENCY LIGHTING IN PLANT AREAS FOR REQUIRED
OPERATOR ACTIONS FOR SAFE SHUT DOWN WITH CONTROL ROOM
EVACUATION

<u>Room No.</u>	<u>Title</u>
1107	Centrifugal Charging Pump Room Train B
1111	Residual Heat Removal Pump Room Train A
1115	Normal Charging Pump Room
1126	Boron Injection Room
1207	Pipe Chase El. 1989'-0"
1318	Valve Compartment
1320	Corridor No. 4
1322	Pipe Penetration Room Train B
1323	Pipe Penetration Room Train A
1401	Component Cooling Water Pump & Heat Exch. Room Train B
1402	Corridor (No. 1)
1403	M. G. Set Room
1408	Corridor (No. 2)
1409	Electrical Penetration Room Train B
1410	Electrical Penetration Room Train A
1413	Aux Shut Down Panel Rm.
1501	Control Room A/C and Filtration Units Room Train B
1508	Main Steam Isolation Valve Rm. (No. 1)
1509	Main Steam Isolation Valve Rm. (No. 2)
1512	Control Room A.C and Filtration Units Room Train A
3101	Pipe Space and Tank Area Control Building El. 1974'-0"
3301	ESF Switchgear Room Train A
3302	ESF Switchgear Room Train B